35. ~~38.~~ The patch bag according to Claim ~~37~~ 34, wherein the second layer comprises homogeneous ethylene/alpha-olefin copolymer.

36. ~~39.~~ The patch bag according to Claim ~~33~~ 31, wherein the homogeneous ethylene/alpha-olefin copolymer comprises homogeneous long chain branched ethylene/alpha-olefin copolymer.

B4 and

40. The patch bag according to ~~Claim~~ 17, wherein the first heat-shrinkable film has a free shrink, at 185°F, of from about 10 to ~~100~~ percent.

37. ~~41.~~ The patch bag according to Claim ~~17~~ 16, wherein the second layer consists essentially of homogeneous ethylene/alpha-olefin copolymer.

38. ~~42.~~ The patch bag according to Claim ~~41~~ 37, wherein the second layer consists of homogeneous ethylene/alpha-olefin copolymer.---

REMARKS

I. Status of the Claims

Claims 1-29 are pending in this application, of which Claims 1 and 28 are the pending independent claims, with Claims 2-27 and 29 being dependent claims. In the Office Action of December 13, 1997, all claims stand rejected. This Amendment under 37 CFR 1.111 is in response to all of the rejections of pending Claims 1-29.

As amended above, newly-presented Claims 30-42 are also pending. Newly-presented Claim 30 is directed to a patch bag in which the second heat-shrinkable film (i.e., the bag film) comprises linear low density polyethylene having a density of from about 0.91 to 0.94 g/cc. As exemplary support for newly-presented Claim 30, Applicants direct attention to Film No. 19 (Pages 37-39), which discloses a patch film containing linear low density polyethylene. Attention is also directed to Page 17 lines 6-8 of the specification, which discloses linear low density polyethylene as having a density of from about 0.91 to 0.94 g/cc.

Turning to support for newly-presented Claim 31, Applicants direct attention to their Examples 14, which disclose a three-layer tubular film (the inside layer of which self adheres, to form a six-layer patch film). This film has an outer layer comprising linear low density polyethylene, an inner layer comprising a homogeneous ethylene/alpha-olefin copolymer, and a self-adhering layer comprising ethylene/vinyl acetate copolymer.

Turning to support for newly-presented Claim 32, Applicants direct attention to Page 13 lines 1-3 of their specification, which discloses that homogeneous polymers are typically prepared using metallocene, or other single-site catalysis.

Applicants point to their Film Nos. 13, 14, 16, and 17 as examples of support for newly-presented Claims 33-39. Film Nos. 13, 14, 16, and 17 disclose patch films which are made from a collapsed tubing of a three layer film, i.e., resulting in a 6-layer patch film. In Film Nos. 13 and 14, both the first film layer and the second film layer comprise homogeneous ethylene/alpha-olefin copolymer, more specifically long chain branched homogeneous ethylene/alpha-olefin copolymer.

Applicants point to Film Nos. 1 and 2 as support for newly-presented Claims 40-42. Film Nos. 1 and 2 disclose patch films which are made from a collapsed tubing of a two-layer film, i.e., resulting in a 4-layer patch film. In Film Nos. 1 and 2, the second film layer comprises homogeneous ethylene/alpha-olefin copolymer.

Applicants contend that newly-presented Claims 30-42 contain no new matter.

II. The Rejection of Claims 1-29 under 35 U.S.C. 103, as Obvious over FERGUSON in view of ELSTON and CHUM et al.

In the December 13 Office Action, the Examiner rejected Claims 1-29 under 35 U.S.C. 103, as unpatentable over U.S. Patent No. 4,770,731, to Ferguson, ("FERGUSON") in view of U.S. Patent No. 3,654,992 to Elston ("ELSTON") and U.S. Patent No. 5,427,807, to Chum et al (CHUM et al). The Examiner states that FERGUSON discloses a patch to be used with a heat-shrinkable bag; that the patch is heat-shrinkable with the bag to reduce the tendency of delamination; that the patch is comprised of two outer layers and two inner layers, and that the outer layers are comprised of 87% by weight linear low density polyethylene, ethylene-vinyl acetate, pigments and additives; that the inner layers comprise ethylene-vinyl acetate copolymer; and, that the linear low density polyethylene has a density of 0.900 to 0.935 g/cc. The Examiner then acknowledges that FERGUSON does NOT disclose that the patch and the bag are made of long chain branched homogeneous ethylene/alpha-olefin copolymer. However, the Examiner went on to state that ELSTON teaches homogeneous copolymer of narrow molecular weight distribution which exhibits a reduced haze level in extruded

film, a higher impact strength, a reduced tendency towards delamination in extruded articles, and a better balance of physical properties in the machine and transverse direction of extruded film when compared with conventional heterogeneous polymers. The Examiner went on to state that CHUM et al teaches that the unique characteristic of homogeneously branched, substantially linear ethylene polymers is a highly unexpected flow property where the I_{10}/I_2 value of the polymer is essentially independent of the polydispersity index of the polymer. The Examiner then concluded that it would have been obvious for one skilled in the art to substitute the homogeneous copolymer as taught by ELSTON for the LLDPE in the FERGUSON patch, and also to use it in the bag, to obtain the properties described by ELSTON, and that the properties described by ELSTON are very favorable toward the goal of FERGUSON in reducing the likelihood that a bone will completely puncture and rupture the bag and patch combination, and that it would also have been obvious for the homogeneous copolymer to be homogeneous branched copolymer if the property as described by CHUM et al is desirable. The Examiner then stated that Applicant is not the first to use and recognize the advantage of homogeneous copolymer. Finally, regarding various additional features recited in Applicants' claims, the Examiner stated: (A) that the use of an adhesive to adhere the patch to the bag is conventional and would have been obvious to one skilled in the art; (B) that the amount of shrink claimed in Claims 8-10 is an obvious controlled parameter; (C) that it would have been obvious to have the patch shrinking at a rate which is compatible with the bag to obtain the most optimum result; and, (D) that as to putting additional patches on the bag, it would have been obvious to do so if desired to increase the strength of the patched area of the bag.

B

In response, Applicants contend that Claims 1-29, as well as newly-presented Claims 30-42, are patentable over FERGUSON in view of ELSTON and CHUM et al. Applicants note that the only two pending independent claims, i.e., Claims 1 and 28, have also been amended to recite the first film as having a total free shrink, at 185°C, of from about 10 to 100 percent.[1] Applicants contend that in addition to the above arguments, it is clear that neither FERGUSON nor ELSTON nor CHUM et al disclose a heat-shrinkable film containing a homogeneous ethylene/alpha-olefin copolymer, *wherein the film has a total free shrink at 185°F of from about 10 to 100%.* Applicants contend that whether a homogeneous ethylene/alpha-olefin copolymer can be used to obtain a total free shrink at 185°F of from about 10 to 100 percent, is a question the answer to which is unpredictable. Moreover, neither FERGUSON nor ELSTON nor CHUM et al suggests or otherwise motivates one of skill in the art to make a film having a homogeneous ethylene/alpha-olefin copolymer wherein the film has a total free shrink at 185°F of from about 10 to 100%.

Applicants point out that 185°F is a relatively low temperature for a film to exhibit a total free shrink of from about 10 to 100 percent. In order to have free shrink at such a low temperature, the film must be oriented at a relatively low temperature. Applicants note that not just any polymer can be oriented at such a low temperature. Many polymers cannot undergo orientation at low enough temperatures to provide such free shrink, because the bubble breaks. A new polymer has to be

[1] Applicants note that these amendments do not present a new issue. Rather, a total free shrink at 185°F of from about 10 to 100 percent was previously recited in Claim 8. Claim 8 has been amended to recite a total free shrink at 185°F of from 15 to 75 percent. Thus, the amendment of Claims 1 and 28 do not present a new issue of patentability.

experimented with in order to see if it has the characteristics which allow it to be processed into such a film. Many, indeed most, ethylene-based polymers cannot be used to make a film which has a total free shrink of from about 10% to 100% at 185°F. Thus, Applicants contend that relative to FERGUSON in view of ELSTON and CHUM et al, they have discovered the unpredictable: that homogeneous ethylene/alpha-olefin copolymer can be processed into a film having a total free shrink, at 185°F, of from about 10% to 100%.[2]

Producing a film which exhibits a total free shrink of from about 10% to 100% at 185°F is important in the packaging of temperature-sensitive products, such as fresh red meat. In such packaging, the film needs to be shrunk tight to the meat product at a low temperature, as otherwise the meat will be scorched by heat passing through the film, and undesirable result.

In addition to the arguments above, Applicants have discovered that their heat shrinkable film can provide an unexpectedly high impact strength. See the impact strength results disclosed in TABLE II, on page 28 of Applicants' specification. As can be seen in TABLE II, Film Nos. 1, 2, and 5, i.e., films as recited in Applicants' claims, exhibited impact strengths of 97 pounds, 100 pounds, and 88 pounds, respectively. In contrast, Film Nos. 3 and 4, both of which are comparative films in accordance with FERGUSON, exhibited impact strength of 100 and 87 pounds, respectively. It should be noted that the impact strength of the films of comparative Film Nos. 3 and 4 was unexpectedly high

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[2] Applicants acknowledge that they are not the first to use homogeneous copolymer. However, Applicants appear to be the first to have made a patch bag in which the patch film is a heat shrinkable film containing homogeneous ethylene/alpha-olefin copolymer. This is the subject matter Applicants are claiming. Moreover, it appears that Applicants are the first to have used a homogeneous ethylene/alpha-olefin copolymer to make a film having a total free shrink at 185°F of from about 10 to 100 percent.

at the time of the filing date of FERGUSON. As to the impact strength of the films in Applicants' patch, Applicants contend that obtaining an impact strength comparable to the impact strength of the films in accordance with FERGUSON is also surprising an unexpected. An impact strength of 88 to 109 pounds, for films having a thickness of only 4.7 mils, is surprising and unexpected.

Although ELSTON states that homogeneous polymer can be used to provide higher impact strength, this does not indicate that a heat-shrinkable film containing homogeneous ethylene/alpha-olefin copolymer will necessarily have higher impact strength. On the contrary, Applicants have discovered that the properties present in blown films do not necessarily translate to heat-shrinkable films. Rather, the properties obtained in blown films are often not obtained in heat-shrinkable films. In other words, those of skill in the art of manufacturing heat shrinkable films recognize that an advantageous characteristic obtained from the use of a new polymer in a blown film does is not necessarily obtainable if the new polymer is used in a heat shrinkable film. That is to say, a polymer type which shows superior impact performance as a cast or blown film may show reduced performance as a heat shrinkable film. For example, a homogeneous polymer evaluated for its impact performance relative to a heterogeneous polymer as a blown or cast film was seen to show an improvement therein. When evaluated against the same heterogeneous polymer as a heat-shrinkable film, it was seen to be inferior in impact performance to the same heterogeneous polymer. Thus, one cannot predict whether a given property, such as impact strength, will be higher in a heat-shrinkable film if it is known to be higher in a blown film. Accordingly, it is apparent that impact strength across polymers is not predictable if the comparison is also across blown films versus heat-shrinkable films.

Turning next to newly-presented Claims 33-39, Applicants note that independent Claim 33 is directed to a patch bag in which the heat-shrinkable patch film comprises a homogeneous ethylene/alpha-olefin copolymer in an inner film layer of a film which has at least three layers before it self-adheres. The patch films disclosed in FERGUSON is a two-layer film which self-adheres to form a four layer patch film. FERGUSON does not specifically disclose or suggest a patch film having three or more layers which self adhere, in which at least one inner film layer comprises homogeneous ethylene/alpha-olefin copolymer. Using the homogeneous ethylene/alpha-olefin copolymer of ELSTON or CHUM et al as a substitute for the LLDPE of FERGUSON does not result in a patch film as claimed by Applicants, because the substituted homogeneous ethylene/alpha-olefin copolymer would have to be in an outer film layer, as both layers of the two-layer patch film (before self adhering) are outer film layers. Thus, neither ELSTON nor CHUM et al provide the motivation to modify FERGUSON in order to arrive at the subject matter of Claim 33.

Moreover, the further features recited in dependent Claims 34-39 are also not provided by FERGUSON in view of ELSTON and CHUM et al. Claim 34 is directed to the first film having a free shrink, at 185°F, of from about 10 to 100 percent. This is not predictable or expected, for the reasons already pointed out above. Claim 35 is directed to a six-layer patch film which is symmetrical with respect to layer thickness and layer composition; this film too is not disclosed or suggested by FERGUSON in view of ELSTON and CHUM et al. Claim 36 is directed to a patch bag in which the second layer (of an at least three-layer patch film, before self-adhesion) comprises homogeneous ethylene/alpha-olefin copolymer, which is not disclosed or suggested by FERGUSON in view of

ELSTON and CHUM et al. Claim 37 is directed to a patch bag in which the first layer (of an at least three-layer patch film, before self-adhesion) comprises homogeneous ethylene alpha-olefin copolymer, which is not disclosed or suggested by FERGUSON in view of ELSTON and CHUM et al. Claim 38 is directed to a patch bag in which both the first and second layers (of an at least three-layer patch film, before self-adhesion) comprise homogeneous ethylene/alpha-olefin copolymer, which is not disclosed or suggested by FERGUSON in view of ELSTON and CHUM et al. Claim 39 is directed to a patch bag having a patch film which has at least three layers (before self adhesion), in which the homogeneous ethylene/alpha-olefin copolymer in the patch film comprises long chain branched ethylene/alpha-olefin copolymer; such long chain branched polymer in a patch film having at least three layers (before self adhesion) is not disclosed or suggested by FERGUSON in view of ELSTON and CHUM et al.

Applicants further point out that Claim 17, and newly-presented Claims 40-44 which depend therefrom, are directed to a patch bag in which the first film (i.e., the patch film) is a multilayer film having two outer layers and two inner layers which are identical in thickness and chemical composition, with each of the inner layers containing homogeneous ethylene/alpha-olefin copolymer in an amount of from 1 to 100 weight percent. In FERGUSON, the inner layer is 100% ethylene/vinyl acetate copolymer, i.e., not a homogeneous ethylene/alpha-olefin copolymer. Applicants have discovered that homogeneous ethylene/alpha-olefin copolymer can be substituted for ethylene/vinyl acetate copolymer, which can be self-adhered to form the patch film. Applicants contend that making the self-adhering layer from homogeneous ethylene/alpha-olefin copolymer

is nonobvious, because it is not predictable whether a film layer of a different polymer will provide the self adhering character.

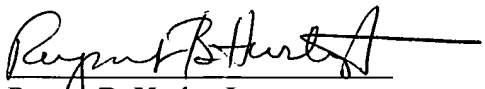
Moreover, Applicants note that Claim 40 depends from Claim 17 and further recites the first film (i.e., the patch film) as having a free shrink, at 185°F, of from about 10 to 100 percent. Applicants maintain that this is nonobvious for the reasons already argued above, i.e., whether a different polymer can be used to make a film which exhibits a free shrink at 185°F of 10 to 100 percent is unexpected and unpredictable. Claim 41 also depends from Claim 17, and further recites the second film layer as consisting essentially of homogeneous ethylene/alpha-olefin copolymer, whereas FERGUSON discloses the second film layer as containing ethylene/vinyl acetate copolymer. Claim 42 depends from Claim 41 and further recites the second film layer as consisting of homogeneous ethylene/alpha-olefin copolymer. Thus, Applicants contend that there are further bases of nonobviousness in each of newly-added Claims 33-42, for the reasons argued above.

III. CONCLUSION

In view of all of the foregoing arguments, it is respectfully submitted that claims 1-45 are patentable over the prior art, and in condition for allowance. Withdrawal of the rejections set forth in the April 15, 1996 Office Action is respectfully requested, with a favorable view towards the allowance of Claims 1-45.

If the Examiner has any questions or otherwise needs to discuss any matters related to this application, the Examiner is invited to call the undersigned at the telephone number provided below.

Respectfully submitted,



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